What is claimed is:

1. A method of improving temporal consistency of an enhanced signal representative of at least one frame using a sharpness enhancement algorithm with an enhancement gain, said method comprising the steps of:

receiving the enhanced signal including at least one frame;

obtaining an enhancement gain associated with the sharpness enhancement algorithm for each pixel in the frame;

determining an updated enhancement gain for the enhancement gain of each pixel in said frame;

storing said updated enhancement gain to gain memory; and

applying the updated enhancement gain to said sharpness enhancement algorithm to improve temporal consistency of said enhanced signal.

2. The method of claim 1, further comprising the step of identifying if the frame is an I frame; and

the determining step including the step of calculating a gain map for use in the sharpness enhancement algorithm, wherein the updated enhancement gain of each pixel is equal to the enhancement gain previously obtained for use in the sharpness enhancement algorithm if the frame is I-frame type.

3. The method of claim 1, further comprising the steps of identifying if the frame is P-frame type or B-frame type; and, if the frame is P-frame type or B-frame type,

retrieving an enhancement gain value of each pixel from a reference frame in the gain memory based on motion vectors;

wherein the determining step includes calculating updated enhancement gain according to the equation:

gain_update = α **gainSEA* + (1- α)**gainREF*

wherein *gain_update* is the updated enhancement gain to use in said sharpness enhancement algorithm, *gainSEA* is the enhancement gain previously defined in said sharpness enhancement algorithm, *gainREF* is the enhancement gain value of a reference pixel pointed by a motion vector in said reference frame, and α is a coefficient in the range between 0 and 1.

4. The method of claim 1, further comprising the step of identifying if the frame is B-frame type; and

the determining step including the step of calculating a gain map for use in the sharpness enhancement algorithm, wherein the updated enhancement gain of each pixel is equal to the enhancement gain from a previous reference frame if the frame is B-frame type.

5. The method of claim 1, further comprising the step of

calculating an improved enhancement gain of a pixel in a frame by applying a motion adaptive temporal IIR filter on said updated enhancement gain stored in said gain memory, said improved enhancement gain is determined by the equation:

gain_final = K**gain_update* + (1-K)**gain_prev*,

wherein *gain_final* is the improved enhancement gain to use in said sharpness enhancement algorithm, *gain_update* is the updated enhancement gain previously stored in said gain memory, *gain_prev* is the enhancement gain of a pixel at the same location in the previous frame, and K is a factor calculated based on global motion evaluation; and

storing said improved enhancement gain to gain memory.

6. The method of claim 5, wherein said global motion evaluation of a frame to determine said K factor comprises the steps of:

calculating an absolute value of the difference between the current frame and a previous frame pixel by pixel;

comparing said absolute value with a predetermined threshold value;

counting a number of absolute values which are greater than said threshold value; and

evaluating global motion based on the equation:

motion_global = count_over/count_num,

wherein *motion_global* is used as the K factor, *count_over* is a number of absolute values greater than said threshold, and *count_num* is a total number of differences calculated.

7. A method of improving temporal consistency of an enhanced signal representative of at least one frame using a sharpness enhancement algorithm with an enhancement gain, said method comprising the steps of:

receiving the enhanced signal including at least one frame;

obtaining an enhancement gain associated with the sharpness enhancement algorithm for each pixel in the frame;

calculating an improved enhancement gain of a pixel in a frame by applying a motion adaptive temporal IIR filter on said enhancement gain, said improved enhancement gain is determined by the equation:

*gain_final = K*gain_SEA + (1-K)*gain_prev,*

wherein *gain_final* is the improved enhancement gain to use in said sharpness enhancement algorithm, *gain_SEA* is the enhancement gain

previously defined in said sharpness enhancement algorithm, *gain_prev* is an enhancement gain of a pixel at the same location in the previous frame, and K is a factor calculated based on global motion evaluation;

storing said improved enhancement gain to gain memory; and

applying the improved enhancement gain to said sharpness enhancement algorithm to improve temporal consistency of said enhanced signal.

8. The method of claim 7, wherein said global motion evaluation of a frame to determine said K factor comprises the steps of:

calculating an absolute value of the difference between the current frame and a previous frame pixel by pixel;

comparing said absolute value with a predetermined threshold value;

counting a number of absolute values which are greater than said threshold value; and

evaluating global motion based on the equation:

motion_global = count_over/ count_num,

wherein *motion_global* is used as the K factor, *count_over* is a number of absolute values greater than said threshold, and *count_num* is a total number of differences calculated.

9. A system for improving temporal consistency of an enhanced signal representative of at least one frame using a sharpness enhancement algorithm with an enhancement gain, said system comprising:

means for receiving the enhanced signal including at least one frame;

means for obtaining an enhancement gain associated with the sharpness enhancement algorithm for each pixel in the frame;

means for calculating an improved enhancement gain of a pixel in a frame by applying a motion adaptive temporal IIR filter on said enhancement gain, said improved enhancement gain is determined by the equation:

*gain_final = K*gain_SEA + (1-K)*gain_prev,*

wherein *gain_final* is the improved enhancement gain to use in said sharpness enhancement algorithm, *gain_SEA* is the enhancement gain previously defined in said sharpness enhancement algorithm, *gain_prev* is an enhancement gain of a pixel at the same location in the previous frame, and K is a factor calculated using global motion evaluation means;

means for storing said improved enhancement gain to gain memory; and

means for applying the improved enhancement gain to said sharpness enhancement algorithm to improve temporal consistency of said enhanced signal.

10. The system of claim 9, wherein said global motion evaluation means for determining said K factor comprises:

means for calculating an absolute value of the difference between the current frame and a previous frame pixel by pixel;

means for comparing said absolute value with a predetermined threshold value;

means for counting a number of absolute values which are greater than said threshold value;

means for evaluating global motion based on the equation:

motion_global = count_over/count_num,

wherein *motion_global* is used as the K factor, *count_over* is a number of absolute values greater than said threshold, and *count_num* is a total number of differences calculated.

11. A system for improving temporal consistency of an enhanced signal representative of at least one frame using a sharpness enhancement algorithm with an enhancement gain, said system comprising:

means for receiving the enhanced signal including at least one frame;

means for obtaining an enhancement gain associated with the sharpness enhancement algorithm for each pixel in the frame;

means for retrieving an enhancement gain value of each pixel from a reference frame in a gain memory based on motion vectors;

means for identifying if the frame is an I, P or B frame type;

means for determining an updated enhancement gain for an I frame type by calculating a gain map for use in the sharpness enhancement algorithm, wherein the updated enhancement gain of each pixel is equal to enhancement gain previously determined for use in the sharpness enhancement algorithm;

means for determining an updated enhancement gain for a P or B frame type according to the equation:

$$gain\_update = \alpha * gainSEA + (1-\alpha) * gainREF$$

wherein *gain_update* is the updated enhancement gain to use in said sharpness enhancement algorithm, *gainSEA* is the enhancement gain previously defined in said sharpness enhancement algorithm, *gainREF* is the enhancement gain value of a reference pixel pointed by a motion vector in said reference frame, and α is a coefficient in the range between 0 and 1;

means for storing said updated enhancement gain to gain memory.

12. The system of claim 11, further comprising:

means for calculating an improved enhancement gain of a pixel in a frame by applying a motion adaptive temporal IIR filter on said updated enhancement gain, said improved enhancement gain is determined by the equation:

*gain_final = K*gain_update + (1-K)*gain_prev,*

wherein *gain_final* is the improved enhancement gain to use in said sharpness enhancement algorithm, *gain_update* is the updated enhancement gain previously calculated for said sharpness enhancement algorithm, *gain_prev* is an enhancement gain of a pixel at the same location in the previous frame, and K is a factor calculated using global motion evaluation means;

means for storing said improved enhancement gain to gain memory; and

means for applying the improved enhancement gain to said sharpness enhancement algorithm to improve temporal consistency of said enhanced signal.

13. The system of claim 12, wherein said global motion evaluation means for determining said K factor comprises:

means for calculating an absolute value of the difference between the current frame and a previous frame pixel by pixel;

means for comparing said absolute value with a predetermined threshold value;

means for counting a number of absolute values which are greater than said threshold value;

means for evaluating global motion based on the equation:

motion_global = count_over/ count_num,

wherein *motion_global* is used as the K factor, *count_over* is a number of absolute values greater than said threshold, and *count_num* is a total number of differences calculated.